

FIG. 1

A flow chart of producing water containing fullerenes

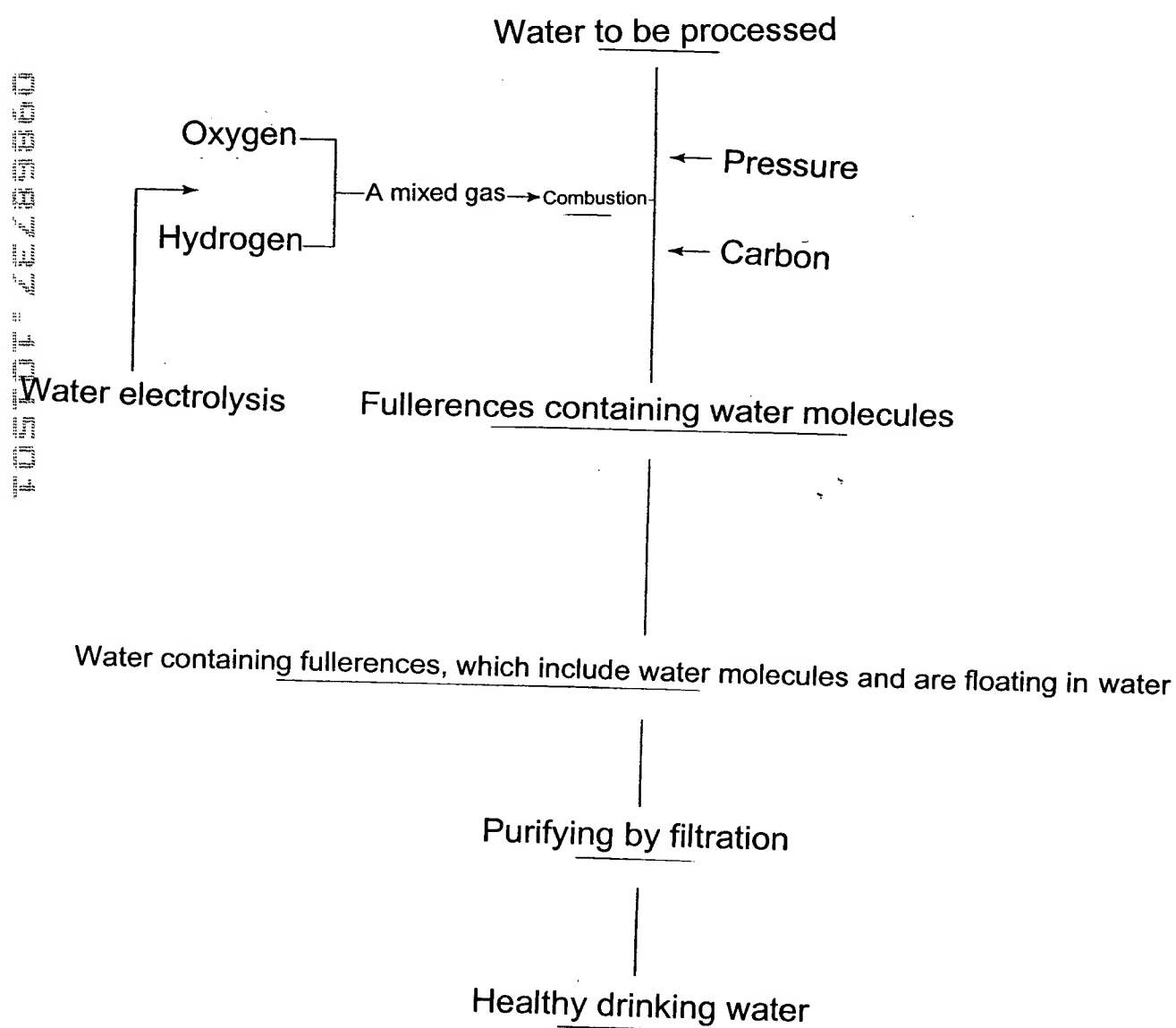


FIG. 2

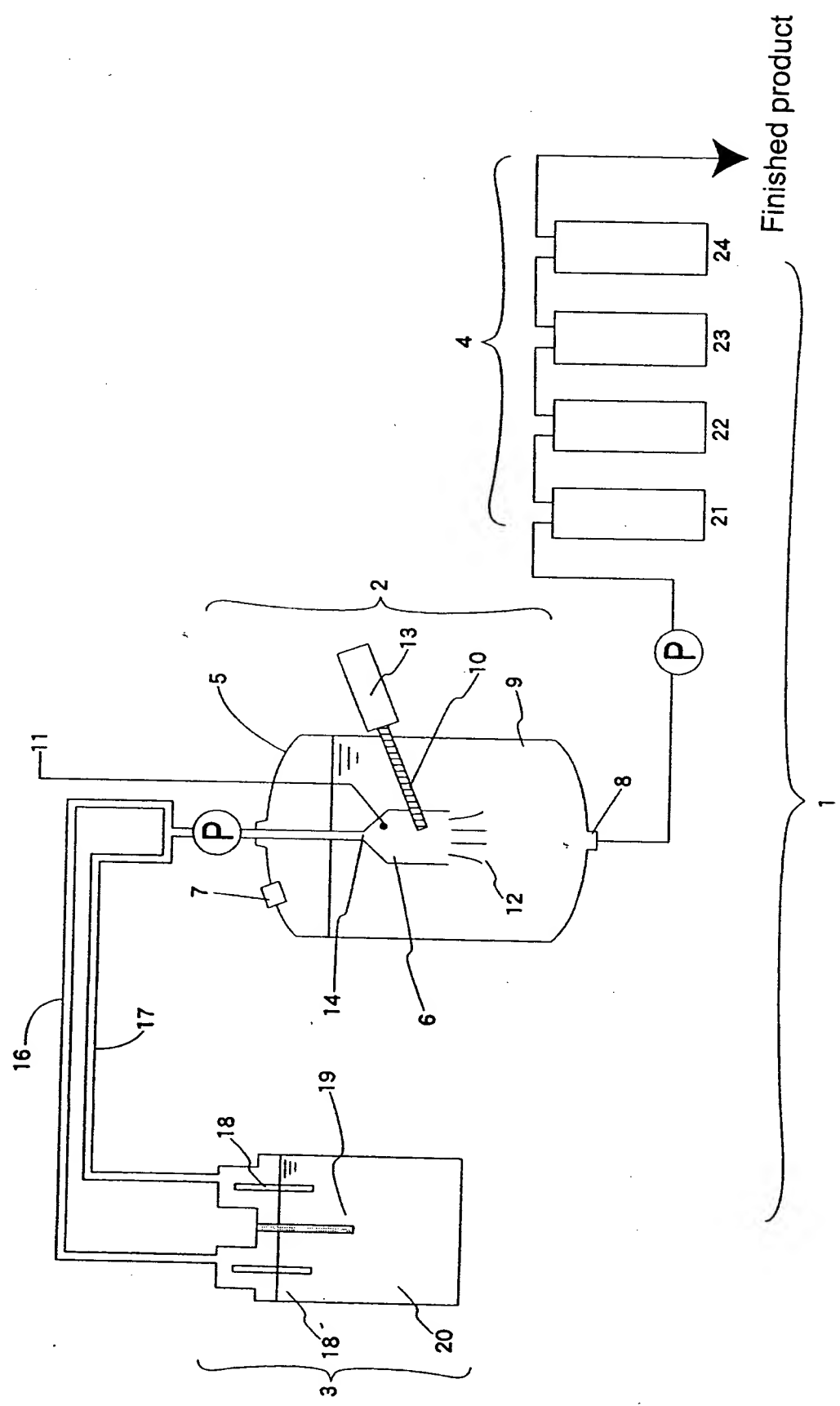


FIG. 3

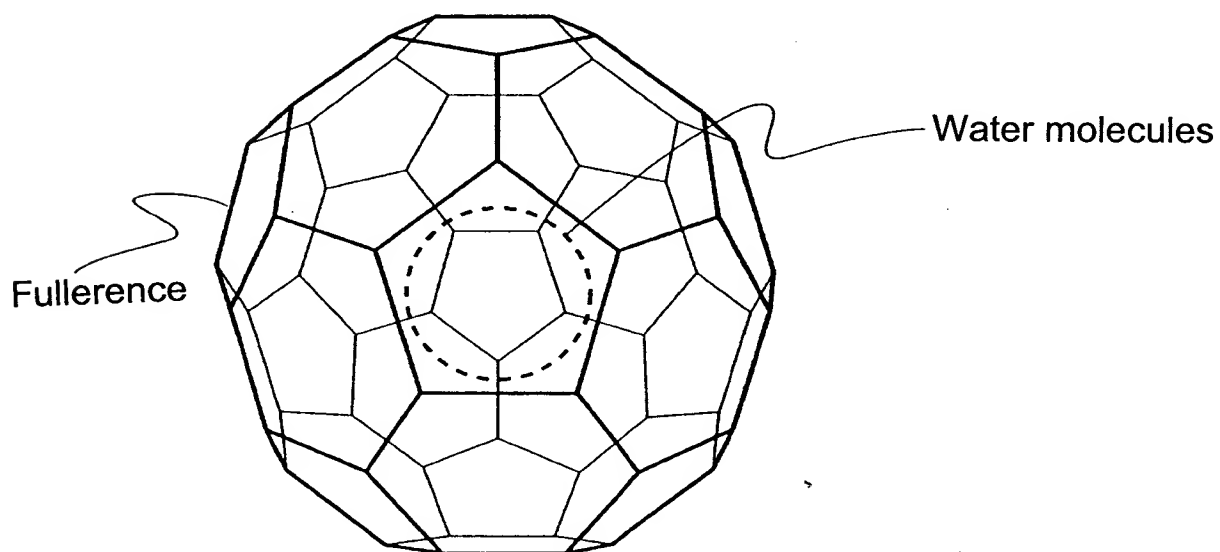


FIG. 4

Various Properties of C_{60} (prepared based on a table from Chemistry, 46, 830, 1990)

Properties (Physical Quantity)	Measured Value, etc.	Properties (Physical Quantity)	Measured Value, etc.
Molecular weight:	720.66	Electron affinity:	2.65 ± 0.02 eV
No. of molecules:	720	Reduction potential ($E^{1/2}$ vs Fc/Fc^+), acetonitrile/toluene, (Et_4N) BF_4 (illegible), $-10^\circ C$:	$-0.98, -1.37, -1.87, -2.35, -2.85, -3.26$ (V)
Molecular structure:	Frustum icosahedron (1_n), Diameter: ~ 7.1 Å C-C bond shared by two six-membered rings 1.391 Å C-C bond forming a five-membered ring 1.455 Å $\delta = 143.27$ ppm	Crystal structure:	Simple cubic system (249K or less) $P\alpha 3, Z=4, a=14.041 \text{ \AA}$ (5K) Face-centered cubic system (249K or more) $Fm 3, Z=4, a=14.17 \pm 0.01 \text{ \AA}$ (300K) Distance between the center of adjacent molecules: $\sim 10.0 \text{ \AA}$
^{13}C -NMR spectrum (C_4D_6)		Density:	1.729 g/cm^3 (5K, calculated value) 1.682 g/cm^3 (300K, calculated value) $(5.5 \pm 0.5) \times 10^{-2} \text{ GPa}^{-1}$
Infrared adsorption spectrum (KBr pellet)/ cm^{-1}	527.4, 576.4, 1182.4, 1428.5 527.1, 570.3, 1169.1, 1406.9	Compressibility (0~20GPa):	$> 700^\circ C$
Infrared emission spectrum (vapor-phase, $850 \pm 100^\circ C$)/ cm^{-1}		Melting point:	$\sim 4.83 \text{ kJ/mol}$
Raman spectrum (thin film)/ cm^{-1}	273(s), 437(m), 496(s), 710(m), 774(m), 1099(w), 1250(w), 1428(m), 1470(vs), 1575(m)	Heat of transition (249K):	$9.58 \pm 0.31 \text{ kJ/mol}$
Visible ultraviolet spectrum (hexane solution, $\log \epsilon$ in parentheses)/nm:	211(5.11), 227(sh, 4.91), 256(5.24), 328(4.71), 390(3.52), 403(3.48), 492(sh, 2.72), 540(2.85), 568(2.78), 590(2.86), 598(2.87), 620(2.60)	Heat of sublimation:	$< 10^{-9} \text{ Scm}^{-1}$
Fluorescence spectrum (toluene solution, at room temp.)/nm	No observation (thin film, 20K), 706.7(main), 787.4, 877(sh)	Conductivity (at room temp.):	$\sim (260 \pm 20) \times 10^{-8} \text{ emu/mol}$
Triplet energy (toluene solution)	$1.56 \pm 0.03 \text{ eV}$ ($8.60 \pm 0.14 \text{ kJ/mol}$)	Molar magnetic susceptibility	K_3C_{60} (18), Rb_3C_{60} (28,30), Rb_2CsC_{60} (31), $RbCs_2C_{60}$ (33), K_2CsC_{60} (24), Na_2CsC_{60} (12), Na_2RbC_{60} (s.5), Na_2KC_{60} (2.5), Li_2CsC_{60} (12), Ca_xC_{60} (8.4), Sn_xC_{60} (12)
Ionization potential	$7.61 \pm 0.02 \text{ eV}$	Transition temp. of superconducting salt Tc(K):	
		Curie temp. of ferromagnetic salt:	$TDAE_{0.55}C_{60}$ 16.1K

* Curie temperature: Temperature at which a paramagnetic substance changes to a ferromagnetic substance when it is cooling down.
TDAE indicates tetrakis(dimethylamino)ethylene.

(Source: K. Tanigaki & others, *Fullerene*, Sangyo-tosho, Oct. 27, 1992, P. 16)